

## ANIMAL HUSBANDRY

1. If your family owned a dairy farm, what measures would you undertaken to improve the quality and quantity of milk production? (Any 3) (2)

2. In spite of the proper application of fertilisers, irrigation and pest and disease control the yield, quality and disease and pest resistance of a self pollinated crop variety is decreasing generation after generation. Suggest a possible reason for this experience.

Hint: The farmer is using seed collected from his own field for raising successive crops. (1) (SAY 2009)

3. Inbreeding depression can be overcome by..... (1) (SAY 2013)

4. Inbreeding is necessary to produce pure-line generation. Give merits and demerits of inbreeding.

5. It is observed that continuous inbreeding of animals for 4-6 generations produced progeny with reduced fertility and productivity. What measures can be taken to improve fertility and productivity of progeny? (2) (SAY 2012)

6. Interspecific hybrids are sterile, but are highly valuable as work animals.

(a) Name an interspecific hybrid.

(b) Write a use of such animals. (2)

7. In a debate, one of the speaker reported like this- "Continuous inbreeding leads to inbreeding depression". If so, define the following:

a. Outcross b. Cross breeding (2) (March 2015)

8. By observing the relationship of the first, fill in the blanks.

Hisardale: Cross breed ; Mule: ..... (1)(Model 2013)

9. Match the following:

	Breeding techniques		Definition
a	Inbreeding	i	Superior male of one breed are mated with superior female of another breed
b	Out crossing	ii	Male and female animals of two different species are mated
c	Cross breeding	iii	Mating of more closely related individuals within the same breed for 4-6 generations
d	Interspecific hybridisation	iv	Mating of animals within the same breed but having no common ancestor

(2)(Model 2019)

10. The offspring obtained from cross-breeding are called hybrid animals.

(a) Name a cross-breed sheep developed in Punjab.

(b) Name its parents (2)(2016)

11. Controlled breeding experiments can be carried out using artificial insemination. What are the advantages of this process?

(2)(March 2018)

12. MOET is a programme for herd improvement.

(a) Expand MOET (1) (March 2013)

(b) Name the hormone used in it (1)(Model 2018)

13. Following are the steps in MOET programme for herd improvement in which a cow has been administrated hormones with FSH-like activity. Arrange the steps A to D in their correct sequence.

A- Transferred to a surrogate mother

B- It is either mated with an elite bull or artificially inseminated.

C- Fertilised egg at 32 cell stage are recovered non-surgically

D- It produces 6-8 eggs instead of one egg which they normally yield per cycle. (2)(2016)

14. Bee keeping requires some specialised knowledge for success.

a. What is the alternate name for bee-keeping?

b. Give your suggestions for successful bee-keeping

c. This is good for agricultural crops. Justify. (2016)

(2) (Model 2018, SAY 2012)

15. List any two economically important products for humans obtained from *Apis indica*. (2)

16. Being a member of the committee of People's Planning Programme of your panchayat, suggest 2 common fresh water fishes to grow in the fresh water fishery project undertaken by your panchayat (1) (SAY 2011)

## PLANT BREEDING

17. In mid 1960s, as a result of various plant breeding techniques, there was a drastic increase in food production in our country. This phase is often referred as ..... (1) (SAY 2010)

18. Plant breeding involves techniques for manipulating plants in order to create the desired plant types. State the steps involved in the production of a new genetic variety of a crop.

(2) (March 2014, 2013, SAY 2016)

19. "Hybridisation is carried out between the species of sugar cane grown in North India and that grown in South India". Comment. (2) (Model 2017)

20. Ram Singh is a conventional wheat breeder. One of the promising varieties is found susceptible to leaf rust.

a. What breeding steps he will adopt to make his original promising variety resistant to leaf rust?

(2) (March 2011, SAY2013)

21. Choose correct answer from the bracket.

A semi-dwarf variety of wheat

(Ratna, Jowar, Sonalika, Parbani Kranti) (2016)

22. Choose the correctly matched pair:

(a) Hilsa - Fresh water fish

(b) Sonalika - Rice

(c) Atlas-66 - Wheat (2017)

23. Match the following varieties with their respective crops.

Variety		Crop
(a) Pusa Swarnim	-	(i) Chilly
(b) Pusa Snowball	-	(ii) Bhindi
(c) Pusa Sawani	-	(iii) Cauliflower
(d) Pusa Sadabahar	-	(iv) Brassica (2)(March 2017)

24. Observe the relation in the first pair and fill up in the second.

a)

Crop	Variety	Resistance to disease
Chilli	<i>Pusa Sadabahar</i>	Chilly or tobacco mosaic virus
Brassica	.....	White rust

b)

Crop	Variety	Insect pest
Flat bean	<i>Pusa sem 2</i>	Jussids, fruit borer and fruit aphids
Okra	.....	Shoot and fruit borer

(1) (SAY 2014)

25. Select the disease resistant variety of Bhindi produced by mutation breeding-

- (a) Himgiri (b) Parbhani Kranti  
(c) Pusa Gaurav (d) Pusa Komal

(1)(March 2018)

26. Match the following

- (i) Rice - *Pusa sadabahar*  
(ii) Chilli - Himgiri  
(iii) Cauliflower - Jaya and Ratna  
(iv) Brassica - *Pusa shubhra*  
(v) Wheat - *Pusa swarnim* (3)

27. Breeding crops with the objective of increased nutritional quality is called ..... (1) (March 2017)

28. Bio-fortification is a practical approach to improve the public health. Name any 4 such crops released by IARI. (2)(March 2018)

29. The local people in a village wanted to produce a crop with improved nutritional qualities. What are the major objectives to be included to improve the nutritional qualities? (2) (SAY 2014, March 2010)

30. A medical officer prescribed biofortified food for a tribal community to eradicate health problems.

- a. What is biofortification?  
b. Mention any 2 objectives of that.  
c. Write the name of biofortified crop which enriched with vitamin A. (2) (Model 2019, 2017, SAY 2014)

31. Johnny, a plus student from a tribal colony is with lower level of vitamins, minerals and protein deficiency. He wishes to be a plant breeder to help the public by producing new crops with high levels of vitamins, minerals, protein etc. Identify the phenomenon? (2)

### SINGLE-CELL PROTEIN

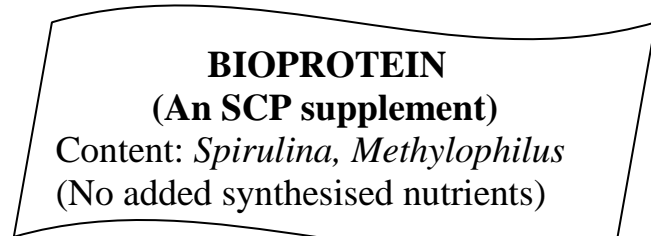
32. A news paper report read like this-

“Conventional agricultural products like cereals, pulses and other seeds may not be able to meet the demand of food according to the increase in population. So focus has to be shifted to alternate food source like SCPs”

- a. What are SCPs?  
b. Give 1 example for SCPs  
c. What are the advantages of SCPs? (2) (March 2012)

33. 250 Kg cow produces 200g of protein/ day. In the same period, 250g of *Methylophilus methylotrophus* produce 25 tonnes of protein. Then what is single cell protein? (2) (March 2015)

34. A diet food supplement pack reads



- (a) Why it is named as bioprotein?  
(b) What is meant by SCP supplement? (2)

### TISSUE CULTURE

35. Vidya got a plant which was affected with a viral disease. Her objective is to raise a disease free plant from this infected plant through tissue culture.

- a. Which part of the plant should be selected as the explant?  
b. State the reason for the selection of this part as the explant. (2)(March 2014, SAY 2016)

36. Cellular totipotency: It is the capacity of plants to generate into whole plant from cell/ explant.

- a. Name the plant propagation method using this principle.  
b. What is explant?  
c. Why this is called micropropagation?  
d. The plants produced are called somaclones. Justify? (2) (Model 2013, March 2012)

37. Morphologically and genetically similar individuals are called ..... (1) (March 2013)



38. Tissue culture is a fast and efficient system for crop improvement. Scientists in a research institution want to produce a hybrid of potato and tomato. Is it possible to make such a hybrid? If possible, explain how? (2) (SAY 2010)

39. Resistance is the ability to prevent the pathogen from causing disease.

- (1) Elucidate the steps in breeding for disease resistance.  
(2) Cite two examples for virus resistant plants. (Scores: 3)  
OR

Tissue culture is an achievement in plant breeding. What is a somaclone? Describe the production of somatic hybrid. (3) (March 2016)

40. The regeneration of whole plants from any part of the plant grown under sterile conditions is called tissue culture.

- (a) The general term of the part of the plant taken out for tissue culture is .....  
(b) The capacity to generate a whole plant from any plant cell is ..... (2)